pink, healthy appearance of bone from which the periosteum has been recently separated. To have removed this exposed portion of bone, besides being very difficult on account of its deep and unapproachable location, would have jeopardized the integrity of the shaft and have made it likely that fracture of the femur would be a superadded complication. It was therefore decided to adopt a conservative course. According to the mode of the time, the bone cavity was packed with iodoform gauze, the soft parts allowed to fall into place. The wound pursued the usual course in such conditions, and the bone cavity rapidly filled in and the entire wound promptly cicatrized over. No fistula remained as I feared would result. The deep location of the bone did not facilitate examination of the portion devoid of periosteum, but there was nothing in the process of healing or after history to suggest the occurrence of even superficial necrosis where the femoral shaft had been deprived, by infection, of its protecting membrane.

A recent experience again illustrates this same truth. A middle-aged man presented himself at my office with a paronychia of the left middle finger. The infection had resulted from a laceration at the finger tip some ten days previous, and when he came to me a well-developed phlegmon existed on the left side of the nail near the base. This was promptly incised. Examination showed no exposed bone. A few days later swelling on the opposite side of the nail developed, and this was likewise incised. Through this latter incision the probe could be readily passed to the anterior surface of the base of the terminal phalanx, and when moved transversely to the long axis of the finger showed that the periosteum was either destroyed or separated across the entire width of this part of the bone—close to half an inch. The vertical extent of the denuded bone was not determined. Free drainage was maintained and in a few days, as soon as the amount of suppuration was somewhat diminished, Beck's bismuth-vaseline paste was injected. Pus production immediately practically ceased. On the following day, only, another quantity of the paste was forced in. The sinus promptly healed, and the finger has since remained sound.

Not the fact that infection has reached the surface of the bone; not the fact that a greater or a lesser extent of bone has been deprived of its periosteum in the presence of infection, but rather this: the extent to which the process of arterial and capillary thrombosis has advanced, whether to or within the osseous structure, determines whether the bone vitality may be maintained or necrosis will result. Early incision, free drainage, may be deciding factors in the outcome. And when bare bone is detected, at least for a while, until the *tactus eruditus* determines that necrosis has actually occurred, a Wilsonian attitude of "watchful waiting" is justified and something of hope may rightfully lighten our prognosis.

Furthermore, when ostitis and bone death result from periosteal infection, and is unassociated with the obstruction of more or less of the major circulation of the bone from the nutrient vessels, such as occurs in osteomyelitis, it will rarely happen that anything more than a superficial necrosis —one involving the outer lamellae only—will result.

THE UTILITY OF CATARRHAL VACCINES.*

By FRANCIS WILLIAMS, M. D., San Francisco.

My attention was drawn to catarrhal vaccine a year ago, while seeking to cure my little daughter of a persistent recurring rhinitis, similar in nature to an affection which a year prior existed in her brother, terminating as an acute infective cellulitis of the cervical and mediastinal regions, the adenoid tissue acting as port of entry, so causing the first infection of his life at 2 years of age to end fatally. With this in mind, I gave one-half ampoule of Sherman's No. 7, containing:

Micrococcus catarrhalis.....50 mill.
Pneumococci .....20 mill.
Streptococci .....15 mill.

An increased and watery secretion from nares followed for 12-24 hours, then cessation for one week. A slight recurrence required a second injection, with similar increase ensuing followed by freedom from all catarrhal affections from April to February, when she passed through a brief attack of grippe, and in March, incipient pertussis, both of which seemed to yield quickly to vaccines.

From last December to the present date there have occurred many cases of intractable recurrent "colds," tonsillitis, pharyngitis, and rhinitis. During this period I have used catarrhal vaccine in 32 cases, giving about 70 injections. The cases were divided as follows:

Recurrent "colds" and rhinitis.....	8
Tonsillitis and pharyngitis.....	9
Bronchopneumonia (1 post pertussal).	2
Pertussis	6
Spasmodic cough with catarrhal conditions	5
Chronic laryngitis.....	1
Prophylactic	1

Results:

Improvement marked with 1st or 2d injection	22
Moderate—ran a course but moderated	8
None (Pertussis in adult).....	1
No data (Chronic laryngitis).....	1

Typical Cases:

Quinsy. Mrs. W., aet. 22, severe quinsy with membrane one month prior. Swab negative, but given 2000 units diphtheria antitoxin with prompt recovery. Second attack December 3. Feared antitoxic serum because of anaphylaxis. Resisted all usual treatment and began to invade peritonsillar tissue, with rise of temperature. Gave 100 mill. Micr. catarrh., etc., at 11 a. m. At 6 p. m. patient was distinctly improved and recovery was very rapid during following two days. This, of course, represents extreme of favorable result.

Mr. McN., aet. 38, represents a more discouraging type. Ill several days when first seen, with

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general peritonsillar infiltration and closure of fauces. Injections 100 mill. Micr. catarrh., etc., on two successive days, with some local improvement and subsidence of temperature from 103° to 100°. Omitted injection third day. Fourth day full recurrence of conditions, renewed swelling and fever. Injections fourth and fifth days, with a complete subsidence occurring. This patient did not sleep or take nourishment to any degree the first week and was a severe test. Though no case is a proof, this one surely varied favorably with his vaccine therapy. No pus was discovered by lancing or rupture.

Recurrent Colds. Donald and Russell W., aet. 2 and 4 yrs. Recurrent colds several months, though very vigorous children in good surroundings. Russell received injections December 3d and 8th; much improved until January 17th, when a spasmodic cough called for mixed pertussis and Micr. catarrh. vaccine, yielding to one injection. Donald received an injection December 5th; improved markedly until January 16th, when a spasmodic cough yielded to one injection of mixed pertussis and Micr. catarrh. vaccine. April 9th a slight tonsillitis yielded to an injection of catarrhalis mixed.

Pertussis. While I find the pertussis vaccine very helpful, this paper's scope only permits me to say that I found the addition of the catarrhalis mixed a useful adjunct in controlling catarrhal symptoms.

In using the catarrhal vaccine upon myself for a severe resistant pharyngitis and rhinitis, I injected 50 mill. intravenously. Within ten minutes the throat and nose symptoms disappeared, to be as quickly supplanted by a generalized attack of muscular rheumatism which in four hours localized in the neck muscles. Although a therapeutic failure, it suggested an etiologic relationship between throat infections and the muscular type of rheumatism. In this instance Phylacogen an agent frequently effective in aborting acute articular rheumatism failed to modify the muscular form, when tried 24 hrs. later.

In conclusion, it is proper to answer certain questions.

How long should we continue the injections to cure and secure immunity?

To cure or relieve the attack, one to three injections one to three days apart usually suffice. I spaced my doses to maintain improvement, symptoms of relapse calling for another injection. To secure immunity, it is probable that we should continue injections rather beyond the period necessary to abort the attack, as I have observed a tendency to relapse in some cases.

What dosage is necessary?

A reliable answer must be based on larger experience. I can only say that in the first four years of life I used 20 to 40 millions of the Micr. catarrh. and gave adults up to 100 millions, in only one case (myself) using 200 millions, with less satisfactory result.

How does this treatment by injections affect the physician's relations with young children?

It would appear to have little effect. The child is turned over the mother's or nurse's knee, the injection given in the gluteal fold is but slightly painful, soon forgotten, and scarcely associated with the physician, especially if treated as an accidental pin prick calling for a little sympathy and rubbing.

At what age is the vaccine most effective?

Young cells possess the greater margin of reactive power, and upon this the efficiency of vaccines depends; so it follows that the first two or three decades of life give the best results. Older persons react more gradually and usually not so favorably.

The number of cases here reported is too small and too recent to base conclusions. And certainly nothing can warrant neglect of necessary surgery for the upper respiratory tract. But often we must deal with pathology here by medical means, temporizing until acute inflammation subsides or until financial convenience permits proper surgical interference.

This brief experience gives me the impression that vaccine therapy is probably to be our best single agent, exclusive of proper surgery, in handling infections of the upper respiratory tract, and would indeed seem a good preliminary to surgical correction in cases of recurrent "colds." Finally, I wish to make a plea for the importance of checking rhinitis in children, as it seems to weaken the mucosa and permit in certain instances the penetration of the lymphoid tissues by virulent and rapidly spreading infections, which, in their rapid fatality, are more serious even than the acute and chronic forms of adenitis so familiar and frequent in the cervical region.

Discussion.

Dr. K. Pischel: I only wish to express my admiration of the courage of Dr. Williams in experimenting upon himself. I wish some others had done that. I remember, some time ago, a patient of mine who, during my absence, was injected with Schaefer's serum, and died promptly seven hours later with a temperature of 108°; I am sorry that doctor did not try it on himself first.

Dr. Cullen F. Welty: We have listened to a very instructive talk from Dr. Williams, and I must say that I am pleased to hear what he has to say. In my own practice, I find it difficult to produce satisfactory results. The acute coryzas, whether in young or old, are sometimes benefited by my treatment and sometimes not. I do not hold out anything to my patients, and in fact, I rather discourage them to make further visits, because I have such little confidence in my own ability to do anything for them.

However, this infection has a wider significance, and if we only stop to think and reason for a time we will see why it is that children are so susceptible to these inflammations. It is because the nose is congested, and it is congested largely because of adenoids and tonsils. The adenoids, especially, are most sensitive to changes, and will take on the slightest infection at any time. In going about the slums of the city you notice the children with dirty noses. All those children are chuck full of lymphoid tissue, and when this tissue is removed, they get well. That is universally so.

The Doctor speaks of immunity following repeated injections of the vaccines, which I have not seen. It may be so, but nevertheless, that immunity is going to wear off sooner or later, because the pathology: the background of the whole proposition, still remains. You take a grown-up person who is subject to cold, to rhinitis, and you will always find in that individual a pathological lesion in the nose or throat which you can trace as the cause of the trouble. Within

six weeks from its removal, the patient will be absolutely healthy. I say six weeks, because there is a slight tenderness following operative procedures, but they will correct themselves and the patient will be in fine condition. The Doctor speaks of treating peritonsillar abscess by the use of vaccines. If you have a pocket of pus, the best way is to open it. I want to tell you a little secret that will be very good for all of you. Seek the place that is the hardest with your finger and put your knife in there, and you will always find pus if you go deep enough. With regard to diphtheria carriers, I hope Dr. O'Neill will speak on that subject. I have assisted Dr. O'Neill in some cases where everything has been done to eliminate the Klebs-Loeffler bacillus and nothing was of avail until the lymph tissue was removed. The Doctor speaks of his own case, of this rheumatism following the injection which, to those who were present last night at the Rosenau lecture, is very conclusive. It is nothing other than further infection. I want to speak again of these cases of acute infection. If vaccine will relieve it, use it, but for a permanent cure, take away the pathological condition.

Dr. A. A. O'Neill: I would state that I have not had the success in the use of vaccines that I had hoped for. Especially is this the case in the use of the antitussis vaccine for pertussis. I have given as high as 800,000,000 at a dose with no apparent diminution of the number of paroxysms or no apparent shortening of the disease. The same remarks apply with equal force to the entire list of vaccines, with the possible exception of the antistreptococcus in erysipelas. In regard to this disease there are so many remedies that have been lauded to the skies giving, according to accounts, such apparently miraculous results that I think it behooves us all to wait until this remedy (the antistreptococci vaccine) has been tried out in a sufficiently large number of cases before giving forth any dictum. Incidentally, I would like to register a protest against the use of the so-called polyvalent vaccines, for the reason that:

First: It savors of polypharmacy and shotgun methods, or the hit and miss system of administering drugs. Second: We should endeavor to find the organism that is at fault, and if possible make an autogenous vaccine. This latter is the ideal method, but ofttimes presents insurmountable difficulties. In view of the fact that Dr. Welty has spoken of the work that we have done with diphtheria carriers I might summarize it as follows:

I found that in the isolation hospital, as elsewhere, we had a certain number of individuals who, when infected with the Klebs-Loeffler organism went through the usual course of the disease, responded to the use of antitoxin, but became carriers; that is, all lesions would have disappeared from the throat, but still cultures gave us positive results, in spite of the fact that every local remedy was employed that had ever been suggested, including the use of the staphylococcus as had been suggested by recent writers. Owing to their prolonged residence in the hospital, and the fact that all remedies had failed, I suggested the propriety of removing the tonsils of these patients to Dr. Welty and Dr. Horn. This was done and Dr. Welty has removed the tonsils in some fifteen (15) cases, with the result that these cases cleared up within a week. I thought that this work was original, but upon looking over the literature, find that an Englishman has antedated me by about a year. Some of these carriers were sent into the hospital to have this work done, after having been carriers for as long a period as three months.

Dr. Williams, closing discussion: There is nothing further, any more than to thank Dr. Welty and Dr. O'Neill for their discussions. I quite endorse all that Dr. Welty says in regard to performing first all necessary surgery. The use of the other I feel is merely supplementary to that, and from that standpoint I think it will be found an aid.

SOME CAUSES OF FREQUENT AND PAINFUL MICTURITION IN WOMEN.*

By MARTIN MOLONY, M. D., San Francisco.

A large number of women suffering from frequent and painful micturition, even after the most careful treatment, fail to get permanent relief from their symptoms. These cases come to the notice of the surgeon as he takes a deeper interest in urology. By careful systematic examination he will find that the bladder irritability is an indication, not only of bladder disease, but of the kidney also. The urinary system presents a long, complex surface, and the symptoms may tend to confuse rather than throw light upon the diagnosis. We have it in our power by the aid of symptoms, or special methods of diagnosis, to localize the disease. Exploratory operations for the purpose of discovering the cause often fail. They are unnecessary since accurate information can be obtained without operation. As with the eye, who would think of giving an opinion of an optic disk without an ophthalmoscope? Yet men express their opinion freely of a diseased bladder without looking at it. The means by which many of these diseases can be located with certainty is by the use of the cystoscope. I could quote many cases where, in order to test the value of this method of diagnosis, I have adopted every method of examination, and committed my opinion to paper before cystoscopy, to find my statement often wide of the mark. Some of these diseases are more liable than others to lead us astray.

I will first refer briefly to those cases of renal disease which have the power of accurately simulating cystitis to confuse your diagnosis and defeat your efforts to give relief. Some of us cling to the belief that washing out of the bladder is the panacea for any and every case of cystitis. Our efforts are often sadly shaken by months of bladder washing and our patients, as a result, sadly recognize that we are not infallible.

Three diseases of the upper urinary tract, which you often meet in the routine of practice that simulate cystitis, and in which bladder washing is not only painful but worse than useless are: A. Bacilli coli hematogenous; B. Tuberculosis of the kidney; C. Ureteritis; I will also discuss more fully, D. Some diseases of the neck of the bladder and urethra.

A. *Bacilli coli hematogenous*: We are all aware that microorganisms pass out of the body through the kidney as through a sieve and cause no trouble whatever in their transit. Biedl and Kraus in 1895, and Klecki in 1897, after injecting anthrax bacillus, coli bacillus, or staphylococcus aureus, into the blood of an animal, showed that the microbe leaves the body by the urine, no trace remaining behind. It has been shown by well proven clinical and experimental facts, when two conditions are present, that is, an injured or unhealthy area in the kidney or ureter, and a blood

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